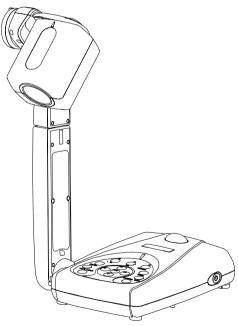
RM® RM Eye

User Manual



Digital Document Camera

FCC NOTICE (Class B)



This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial, industrial or business environment. This equipment can generate, use and

radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult RM or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION ON MODIFICATIONS

To comply with the limits for the Class B digital device, pursuant to Part 15 of the FCC Rules, this device must be installed in computer equipment certified to comply with the Class B limits. All cables used to connect the computer and peripherals must be shielded and grounded. Operation with non-certified computers or non-shielded cables may result in interference to radio or television reception.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.



CE NOTICE

This is a Class B product.

DISCLAIMER

No warranty or representation, either expressed or implied, is made with respect to the contents of this documentation, its quality, performance, merchantability, or fitness for a particular purpose. Information presented in this documentation has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this documentation is subject to change without notice.

In no event will RM be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use this product or documentation, even if advised of the possibility of such damages.



THE MARK OF CROSSED-OUT WHEELED BIN INDICATES THAT THIS PRODUCT MUST NOT BE DISPOSED OF WITH YOUR OTHER WASTE. INSTEAD, YOU NEED TO DISPOSE OF THE WASTE EQUIPMENT BY HANDING IT OVER TO A DESIGNATED COLLECTION POINT FOR THE RECYCLING OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT. FOR MORE INFORMATION ABOUT WHERE TO DROP OFF YOUR WASTE EQUIPMENT FOR RECYCLING, PLEASE CONTACT YOUR WASTE DISPOSAL SERVICE OR WHERE YOU PURCHASED THE PRODUCT.

Battery Safety Information

- Store the batteries in a cool dry place.
- Do not dispose of used batteries in normal waste. Dispose of batteries at special collection points or return to point of sale if applies.
- Remove the batteries during long periods of non-use. Always remove exhausted batteries from the remote control. Battery leakage and corrosion can damage this remote control, dispose of batteries safely.
- Do not mix old and new batteries.
- Do not mix different types of batteries: alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium).
- Do not dispose of batteries in a fire. The batteries may explode or leak.
- Never short circuit the battery terminals.

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Introduction P

Thank you for purchasing your RM Eye ™. This visualiser displays any documents, negatives, transparencies and 3D objects onto a TV, LCD or DLP projector making presentations simple.

RM Eye is an ideal presentation tool for the academic community.

Package Contents



RM® RM Eye



Driver CD



Remote Control (batteries included)



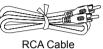
LED Lamp



Carrying Case



User Manual



RCA Cable

S-Video Cable



USB Cable



DVI-RGB Cable



Mini Din-9pin to S-Video/Composite/RS-232 Adapter



Power Cord

* The power cord will vary depending on the standard power outlet of the country where it is sold.



Power Adapter

Optional Accessories



Microscope Adapter (28mm)



Microscope Adapter (34mm)



DVI/VGA Adapter



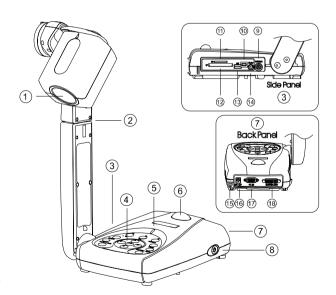
Light Box

* Required to view slide, transparencies and film or to display negative film as positive image.

RM Eye Parts

The illustrations below identify the parts of RM Eye.

- (1) Camera Lens
- (2) Extendable Arm
- (3) Side Panel
- (4) Control Panel
- (5) LED
- (6) IR Remote Sensor
- (7) Back Panel
- (8) Power
- (9) TV/ RS-232 Port
- (10) USB Port
- (11) SD Card Slot
- (12) CF Card Slot
- (13) DIP switch
- (14) DC 6V (output)
- (15) Security Slot
- (16) DC 12V (input)
- (17) PC IN Port
- (18) DVI/VGA OUT Port



Technical Specifications

Image

Pick-up Device	1/3" progress scan CCD
Effective Pixels	790K 1024 (H) x 768 (V)
Frame Rate	20 fps
White Balance (RGB Output only)	Auto/Manual
Exposure (RGB output only)	Auto/ Manual/ Flicker / Night View
Image mode	Text/ Graphics/ Microscope
Effect	Color/ B/W / Negative/ Mirror/ Rotate
Analog RGB output	XGA 75 Hz; SVGA 75 Hz
S-Video, C-Video Output	NTSC/ PAL

Optics

Lens	F1.8-2.7 AF
Shooting Area	380mm x 285mm (max.); 40mm x 30mm (min.)
Zooming	Optical: 5x, Digital: 8x (Accelerated)
Focusing	Auto/ Manual
Power Source	100-220V ~ 1.8A, 50-60 Hz
Consumption	15 Watts (lamp off); 30Watts (Lamp on)

Lighting

Lamp Type LED lamp	Lamp Type
--------------------	-----------

Input

VGA Input	15-Pins D-sub (VGA)
RS232	9-Pins D-Sub Female

Output

VGA Output	DVI to 15pin D-sub (VGA) Cable
DVI	DVI-I Type Female
S-Video	Mini-DIN Jack
Composite Video	RCA Jack
USB	USB Mini B Type
DC 6V Output	Power Jack

Dimension

Operating	220mm x 140mm x 500mm
Folded	380mm x 170mm x 55mm
Weight	2 kg (about 4.4 lb)

Card Supported

Secure Digital (SD)	16~512MB
Compact Flash (CF)	16~512MB

Hardware Installation and Setup

Connection Ports

The ports on the back and side panel of the RM Eye are for connecting the unit to a computer, graphics display monitor or LCD/ DLP projector, TV and other devices. Illustrated below are the ports that are located at the back and side panel of the RM Eye with their corresponding labels.

(3	<u>(a)</u> (b)	
Port	Description	
Security Slot	Connect a Kensington compatible security lock to this slot.	
2. DC 12 V (input)	Plug the power adapter in to this Port.	
3. PC IN Port	Connect the RM Eye to the VGA output port of the computer. This enables you to input computer video signal and pass it through to the DVI/VGA out port.	
4. DVI/VGA OUT	Connect it to a VGA/ Mac monitor, LCD/DLP projector, or high-end projector with DVI interface to display your presentation.	
5. CF Card Slot	Insert the CF card with the label facing up.	
6. SD Card Slot	Insert the SD card with the label facing up.	
7. DIP Switch	Allows you to set the DIP switch configuration settings.	
8. USB Port	This port enables you to use RM Eye as a card reader/writer or PC web cam.	
9. DC 6V (output)	Plug the light module or the optional light box in to this port.	
10. TV/RS-232	Connect the Mini Din 9-Pin to S-Video/ Composite/ RS-232 Adapter to this port.	
	The s-video and composite connectors enable you to output your video camera or preview a picture from a memory card on your TV.	
	Note: The RS-232 adapter allows you to control the RM Eye using a computer through an RS-232 connection. Refer to the RS-232	

control instructions on your CD for more information.

Setting the DIP Switch

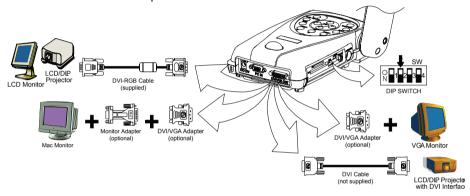
The chart below tells you how to set the DIP switch. Turn the power off before changing the DIP switch setting.



DIP	1	2	3 - 4
Switch	(TV SYSTEM)	(VIDEO OUTPUT)	(ENGINEERING PORT)
UP	NTSC	RGB	Default
DOWN	PAL	TV	X

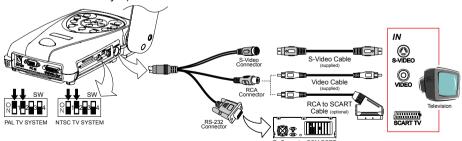
Connecting a VGA, Mac Display Monitor or LCD/DLP Projector

To display a presentation using a DVI/VGA or any graphics display monitor, set the DIP switch no. 2 to the UP position.



Connecting a TV

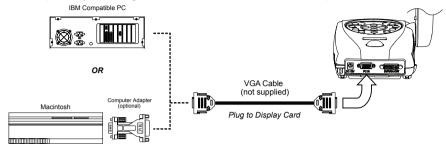
To display a presentation on TV, set the DIP switch no. 1 to the TV system that you have (UP for NTSC and DOWN for PAL) and DIP switch no. 2 to the DOWN position. If you are using a SCART RGB monitor, set the DIP switch no. 1 to the DOWN position for PAL TV system. (The SCART RGB Cable is provided as an optional accessory cable with the RM Eye.)



Note: The RS-232 adapter allows you to control RM Eye using a computer through an RS-232 connection. Refer to the RS-232 control.

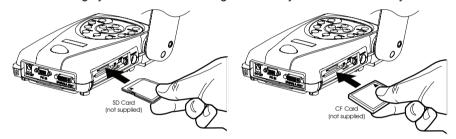
Connecting an IBM Compatible PC or Macintosh Computer

You can connect the RM Eye to an IBM compatible PC, Macintosh, or notebook (laptop) computer. After physically connecting the unit to your PC, you can display an image on your computer by pressing the **PC** button on the unit's control panel or remote control.

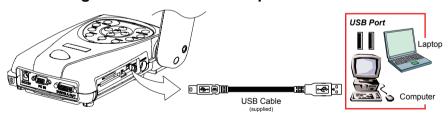


Inserting and Ejecting the Memory Card

Insert the card fully with the label facing up until it reaches the end. To remove, pull the card out. We highly recommend formatting the memory card with the RM Eye.



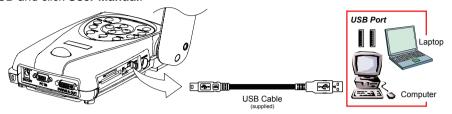
Transferring the Pictures to a Computer via USB Connection



Computer	Requirement
Operating System	
Windows 2000 SP4	No driver is required. Plug the RM Eye into an available
and XP SP1	USB port. A new disk icon appears on your system.
Windows Me and 98/98SE	You need to install the driver before connecting the unit to the computer USB port. Insert the Driver CD in the CD-ROM drive. The installation main screen will automatically appear and then click Install . (For detailed mass storage driver installation procedure, see the instruction provided in the CD and click User Manual .)

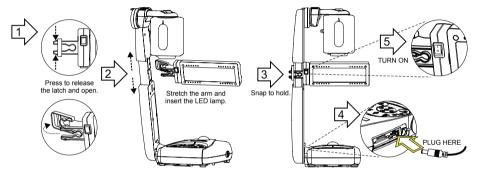
Using RM Eye as USB PC Cam

For detailed PC Cam driver installation procedures, see the instruction provided in the CD and click **User Manual**.



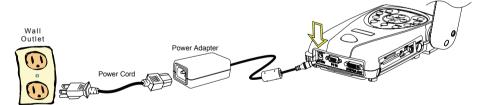
Installing the LED Lamp

To ensure adequate lighting, focus the light towards the object to balance the distribution or range of luminance for better image projection.



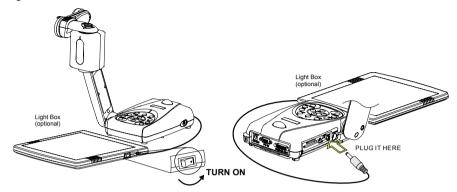
Connecting the Power Adapter

Use a standard 100V~240V AC power source.



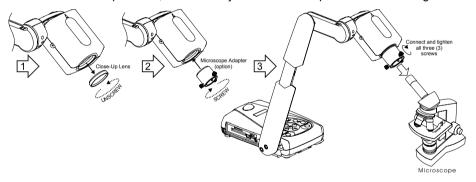
Installing the Optional Light Box

Connecting an optional light box enables you to view x-rays, transparencies and negative slides.



Connecting to a Microscope

Connecting the RM Eye to a Microscope enables you to examine microscopic objects on a big screen without straining your eyes. To view microscopic images, you must set the unit to microscope mode, and then adjust the microscope for a clearer image.

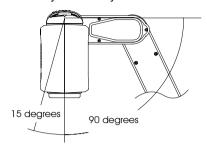


Making the Adjustments

This section describes how your can adjust the RM Eye to meet your needs.

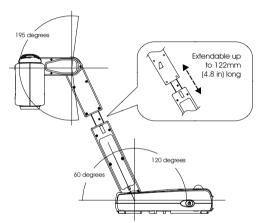
Camera head

The camera head can be rotated 125 degrees from left to right. As you rotate the camera head, the camera adjusts the focus automatically.



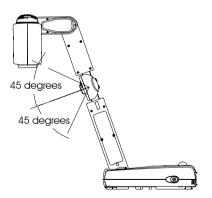
Mechanical Arm

The mechanical arm is designed to move from almost any angle. Follow the illustrated safety procedure to adjust.



LED Lamp

Carefully adjust the light towards the object.



LED Panel

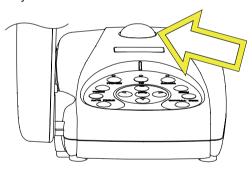
The chart below indicates the different status of RM Eye.



Color	Description
Green	The unit is powered on.
Red	The unit is in standby mode.

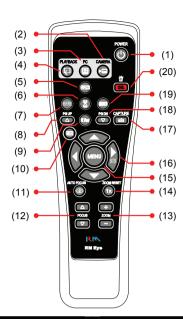
Infrared Sensor

When using the remote control, aim it at the Infrared Sensor, which is located on the front panel of the RM Eye.



Using the Infrared Remote Control

Use the RM Eye Remote Control to enhance your presentation, switch between three presentation modes and access additional features. To use the remote control, first insert the batteries (2 size "AAA" batteries are provided) into the battery compartment at the back of the remote. Use the illustration and descriptions below to help you use the remote control.



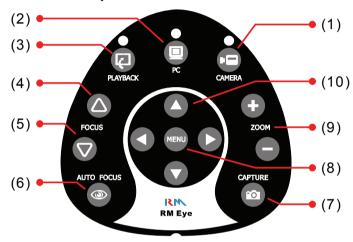
Name	Button	Function
(1) POWER		Turn the unit on/off.
(2) CAMERA MODE		Switch to Camera mode and display the image from the RM Eye's built-in CCD camera.
(3) PC MODE		Switch to PC mode and display the video signal from the RGB input port.
(4) PLAYBACK MODE	e	Switch to Playback mode and toggle to display 16-thumbnail images or the selected image from the memory source.
To switch to other memory source, RM Eye must be in camera mode then press MENU > ADVANCED > MEMORY > TYPE > select the source and press (▶ENTER) > press MENU to exit.		
(5) EFFECTS	ETECTS	Convert and display the video in BW, Negative or Color. (camera mode only)
(6) TIMER	8	Display, start and hide the on-screen display timer. You can toggle to display or hide the remaining time when the timer countdown has started. (See Timer Function for more details)
(7) REVERSE	REVERSE	Rotate the image by 180°. (camera mode only)

Name	Button	Function
(8 & 19) PAGE UP/DOWN	PG UP PG DN	Display the previous and next set of 16-thumbnail images.
(9) NIGHT VIEW	N.View	Turn on/off Night View. Use Night View when you are presenting in a low-light condition. The captured image however, appears in slow motion.
(10) FREEZE	(RE72	Toggle to pause or resume the camera.
(11) AUTO FOCUS		Adjust the focus automatically.
(12) FOCUS △ / ▽	FOCUS	Adjust the focus manually.
(13) ZOOM +/ -	ZOOM	 Zoom in and zoom out the picture digitally in Playback mode. Zoom in and zoom out the image optically and digitally in Camera mode. When it reaches the maximum optical zoom level of about 5 times, you can still continue to digitally zoom in the image up to 800%.
achieving the		n optically zooming the image in and out. After n, the camera automatically adjusts the focus lain.
(14) ZOOM RESET	1x	Return to normal view (1x).
(15) MENU	MENU	Call up and exit the OSD main and sub-menu.
(16) ▲ ▼ ◀ (► ENTER)	MENU	 Use ▲,▼, ◀ and (▶ ENTER) to make a selection and adjustment. And use (▶ ENTER) to enter sub-menu. (See Menu Functions, for more details) Use ▲,▼, ◀ and (▶ ENTER) to make a selection in 16-thumbnail images and press to view the selected image.
(18) CAPTURE	CAPTURE	Photograph an image. The captured image is automatically stored in the memory source at 1024 x 768 resolution.
(20) MIRROR	WIRROR	Flip the image in Camera mode.

Name	Button	Function
(21) DELETE		Remove the selected picture permanently in Playback mode.

Touch Button Control Panel

The touch button control panel located on the top side of RM Eye provides quick access to commonly used functions.



Name	Button	Function
1 CAMERA MODE	©	Switch to Camera mode and display the image from the RM Eye's built-in digital video camera.
2 PC MODE		Switch to PC mode and display the video signal coming from the PC IN port.
3 PLAYBACK MODE	@	Switches to Preview mode and displays 16-thumbnail pictures from the memory card source. It only displays RM Eye's photographed image or 1024 x 768 image resolutions. Note: Use the JPEG Converter application to convert any JPEG file to a format that is supported by the RM Eye.
4 FOCUS △ / ▽	FOCUS	Press \triangle or ∇ to manually adjust the focus.

Name	Button	Function
5 AUTO FOCUS	(3)	Automatically adjust the focus.
6 CAPTURE	©	- In Camera mode, press to photograph an image. If there is an available memory card in the slot, the captured image is stored in the memory card automatically and saved in 1024 x 768 resolution.
7 & 9 MENU/ ◀▲▶▼		 Press MENU to call the OSD menu and then use the ▲, ▶, ▼ and ◀ to make a selection and adjustment. (Refer to the section; Menu Functions, for more details.) In Preview mode, use the ▲, ▶, ▼ and ◀ to make a selection and then press CAP/FULL SCRN button.
8 ZOOM +/ -	ZOOM	In Preview mode, press "+" or "-" to digitally zoom in and zoom out the picture. In Camera mode, press "+" or "-" to optically zoom in and out of the image. When the bar at the lower right corner of the screen reaches the maximum level of magnification about 500%, you can still continue to digitally zoom in the image up to 800%. Note: The image may appear blurry when optically zooming the image in and out. After achieving the desired magnification, the camera adjusts the focus automatically and the image becomes clear again. When you digitally zoom, the image appearance will degrade.

Timer Function

The RM Eye enables you to control the pace of your presentation by displaying the remaining time on the countdown screen. This merely serves as a reminder. When the time is up, the timer blinks at the top right corner of the screen and the presentation screen will not be affected in any way.

To Set the Timer:

- 1. Press MENU to view on screen function selections.
- 2. Press ▲or ▼ buttons to select TIMER.
- 3. Press ▶or◀ buttons to set a time value. You can set the time value up to 120 minutes.
- 4. After setting the time value, press the **MENU** button to go back to the main menu and exit.

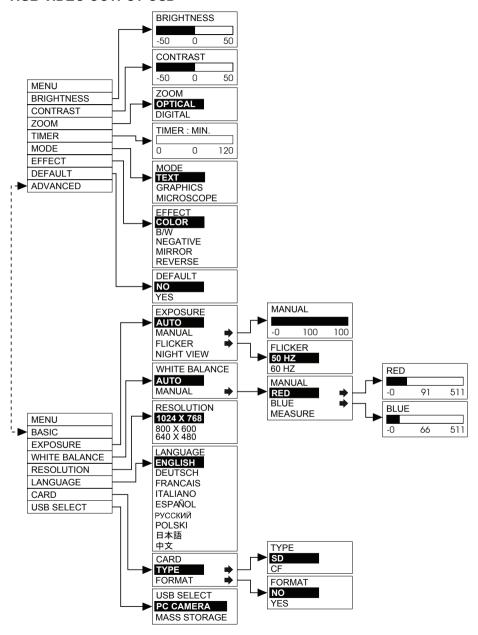
To View and Start the Timer Countdown:

- 1. To display the previously set time value, press once. The RM Eye automatically converts your settings to "hours:minutes:seconds" format.
- 2. To start the countdown, press
 again.
- 3. Once the countdown timer starts, you can toggle the countdown screen to display and hide it by pressing .

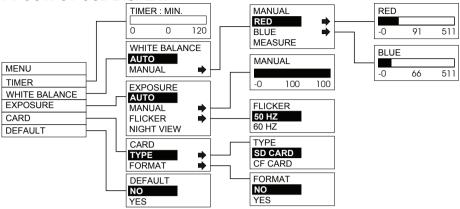
00:00:30

OSD Navigation Tree

RGB VIDEO OUTPUT OSD



TV OUTPUT OSD DISPLAY



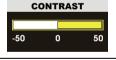
Menu Functions

The RM Eye provides MENU functions enabling you to fine-tune your screen display, set the timer, select OSD language and more. Press the **MENU** button to call up and exit from the main menu or sub-menu display. Then use ▲or▼ buttons to select the items in the menu list. Use (►ENTER) button to enter sub-menu. To adjust the setting, press ◀or▶ buttons.

OSD Menu BRIGHTNESS -50 0 50

Description BRIGHTNESS:

Press ▶or ◀ buttons to increase or decrease the brightness level and improve the visibility of the image. You can adjust the brightness level up to ±50.



CONTRAST ·

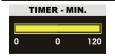
Press ▶ or ◀ buttons to emphasize or reduce the difference between light and dark conditions. You can adjust the contrast level up to ±50.



ZOOM:

Use ▲or ▼ buttons to select between Optical and Digital.

Optical zoom uses the physical lens inside the camera to achieve the desired magnification, wherein the quality of the image is not affected. When using digital zoom, it interpolates the pixels to enlarge the image, which makes the image a bit blurry.



TIMER:

Press ▶or ◀ buttons to set a time value. You can set the time value up to 120 minutes. (See Timer Function for more details)

OSD Menu

Description

MODE TEXT GRAPHICS MICROSCOPE

MODE .

Use ▲or▼ buttons to select between text, graphics and microscope image enhancement mode.

In text mode, the RM Eye corrects the intensity of the adjacent pixel making it more uniform producing sharper and clearer images. While in graphics mode, the RM Eye adjusts the gradient of the adjacent pixel that appears to have a smooth image. Setting it to microscope mode automatically fixes the optical zoom and displays the microscope image more clearly.

EFFECT COLOR B/W NEGATIVE MIRROR REVERSE

EFFECT:

Use ▲or▼ buttons to display the image captured by the camera into positive (true color), monochrome (black and white), negative, mirrored image, or rotated image by 180°.



DEFAULT:

Use ▲or▼ buttons to select YES to restore to original factory default setting or NO to keep the current setting.

MENU BRIGHTNESS CONTRAST ZOOM TIMER MODE EFFECT DEFAULT ADVANCED

ADVANCED:

Press ▶ to go to the Advanced menu.



BASIC .

Press ▶ to go to Basic menu.



EXPOSURE:

Use ▲ or ▼ buttons to select between Auto and Manual.

RM Eye allows you to automatically or manually adjust the camera to determine how much light is required.

If you choose to manually adjust the exposure, press ▶or ◀ buttons to adjust the exposure level.

If you are presenting in a low-light condition, enable Night View mode from the remote control, then RM Eye automatically adjusts the exposure to compensate the adverse condition but the captured image will appear to be in slow motion.

OSD Menu FLICKER 60 Hz WHITE BALANCE MANUAL MANUAL

Description

FLICKER:

Use ▲ or ▼ buttons to select between 50Hz or 60Hz. Some display devices cannot handle high refresh rates. The image will flicker a couple of times as the output is switched to another refresh rate

WHITE BALANCE .



Use A or ▼ buttons to select between Auto and Manual RM Eye enables you to automatically or manually adjust the

camera to suit the lighting condition or colour temperature. If you select to manually adjust the white balance, you can adjust the Red, Blue or use the system to measure the colour temperature.

RED BLUE

To obtain a more accurate colour balance, place a sheet of white paper under the camera. Select MEASURE then press (>ENTER) button to calibrate the colour temperature. Wait until a "MEASURE OK" appears at the lower left corner of the presentation screen.

RESOLUTION

800 X 600 640 X 480

RESOLUTION:

Use ▲ or ▼ buttons to choose from 1024x768, 800x600 or 640x480 display resolution then press (►ENTER) to make the selection. This is available only for RGI and DVI-I video output.

LANGUAGE



LANGUAGE:

Use ▲ or ▼ buttons to select from different languages then press (►ENTER) to make the selection.

TYPE



TYPE:

Use ▲ or ▼ buttons to select the source on where to store or view the image.

FORMAT

FORMAT:

Use ▲ or ▼ to select NO to exit or YES to format and delete all the data in the memory source then press (►ENTER).

USB SELECT

YES

MASS STORAGE

USB SELECT:

Use ▲ or ▼ buttons to select the USB function between PC Camera and Mass Storage.

When RM Eye is connected to PC via USB connection, RM Eye can function as PC Camera and Mass Storage device to transfer the captured images to and from the memory source and computer. With the bundled PC Camera application, you may use it to record your presentation in AVI format or capture still image directly to your PC's hard disk.

Troubleshooting

This section provides useful tips describing how to solve common problems while using the RM Eye.

There is no picture on the presentation screen.

- 1. Check all the connectors again as shown in this manual.
- 2. Check your display output device remote control's on/off switch.
- 3. Verify the setting of the display output device.
- 4. If you are to present using a notebook or computer, you may have to switch the source to VGA.

I have set up the RM Eye and checked all the connections as specified in the manual, but I can not get a picture on the preferred presentation screen.

- Once power is connected. You need to switch RM Eye "ON" from the unit to display the picture on the presentation screen.
- The default camera display resolution setting is on 1024x768. If your output device does not support this resolution you will not be able to see an image on your display device. You can simply press the MENU and RIGHT or LEFT button to the increase or decrease the resolution setting.

The picture on the presentation screen is distorted or the image is blurry.

- 1. Before doing any adjustments, reset all the picture attributes to the factory default setting (Refer to the Menu Functions, for more details).
- 2. Each display device is slightly different from another. Use the Positioning and Adjustment Control of RM Eye to adjust the picture.
- 3. Use the Brightness and Contrast menu functions to reduce the distortion.

There is no computer signal on presentation screen.

When you turn on the computer, it will auto-detect the type of monitor you have. During auto-detection, there won't be any display on your presentation screen. To avoid this problem, connect your computer and all the necessary cables to the RM Eye first before you power on your computer.

Contact Information

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